



Omega Chemical Superfund Site

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 9 • NOVEMBER 2004

EPA Evaluates Indoor Air at Omega Chemical Site

The United States Environmental Protection Agency (EPA) and a group of potentially responsible parties (PRPs) have been conducting an investigation of the groundwater and soil contamination at the Omega Chemical Superfund Site in Whittier, CA (Figure 1). As part of the work, the EPA and PRPs conducted indoor air sampling because volatile organic compounds (VOCs) are present at the Site. Vapor intrusion from VOC-contaminated soil and groundwater into buildings is a growing concern at hazardous waste sites across the country.

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This fact sheet discusses the vapor intrusion pathway in more detail and the recent indoor air sampling conducted at the Omega Site. Based on the data EPA has so far, there are no immediate health risks in any of the buildings sampled. The EPA is still evaluating whether the contaminant levels measured in buildings at and near the Omega Site pose a risk over the long term.

What is the Vapor Intrusion Pathway?

VOCs in the soil and/or groundwater emit vapors that can migrate through subsurface soils and enter overlying buildings through cracks in the floors or through piping conduits. Under certain conditions, this contaminated soil vapor can accumulate in buildings to the point where the contaminants may pose a potential health risk to people living in, working in, or otherwise using those buildings.

There are many factors which affect whether such vapors can accumulate at levels of concern inside a building, including: how volatile the chemical is; the nature of the subsurface soil; the chemical concentrations in soil, soil vapor, and groundwater; the depth to groundwater; and the type and construction of the overlying buildings.

Indoor air quality is also affected by many factors other than subsurface vapor intrusion. Some of the most significant impacts to indoor air quality come from the use of consumer products, personal habits, and

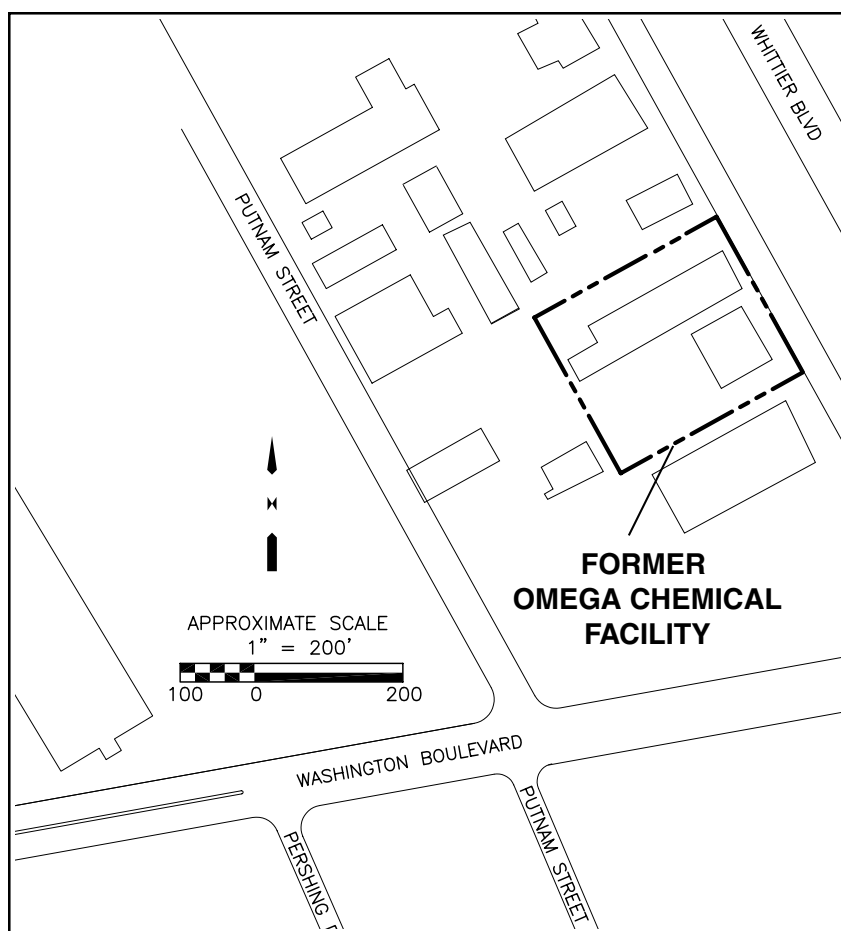


Figure 1: Location of Omega Chemical Superfund Site

outdoor air intrusion. For example, VOCs in cleaning agents, room deodorizers, dry-cleaned clothing, cigarette smoke, vehicle exhaust, and industrial emissions can all affect indoor air quality. Certain adhesives, spot removers, paint removers, scented candles, and automotive cleaning and degreasing products can also be potential sources of chemicals found in indoor air.

What are the Chemicals of Concern at the Omega Site?

The chemicals of concern at the Omega Site are volatile organic compounds (VOCs). The primary chemicals of concern are tetrachloroethene (PCE), trichloroethene (TCE), and 1,1-dichloroethene (1,1-DCE). PCE and TCE are solvents that have been widely used by industry as cleaning and degreasing agents. 1,1-DCE is not commonly used in commercial products.

Results of animal studies, conducted with amounts much higher than those observed in indoor air at the Omega Site, show that PCE and TCE can damage the liver, kidneys, and nervous system, and cause cancer. Based on the animal studies, PCE and TCE are suspected to cause cancer in people. 1,1-DCE is also considered to be a possible cancer-causing chemical based on limited studies in laboratory animals.

Another group of VOCs, freons, are also contaminants at the Omega Site. They are used as coolants and pressurizers in spray can products. They are less toxic than the other chemicals but at extremely high levels may affect the nervous system.

How was the Indoor Air Study Conducted?

The scope of the initial indoor air study included air sampling within two buildings on the former Omega facility and three others in close proximity. Because of their locations, these buildings were considered the most likely to be impacted by vapor intrusion from the Omega Site. In order to evaluate whether other potential sources were impacting indoor air quality, outdoor air samples were collected and the chemical products used in two of the buildings were inventoried.

Indoor air samples were collected in a phased approach. Based on the results of the initial samples, more focused samples were collected within one building (the Skateland facility located on Whittier Blvd.) to provide more location-specific information in that building. The Skateland results are discussed in more detail below. Follow-up samples will also be collected in other buildings.

Most samples were collected using six-liter stainless steel “Summa” canisters which collect indoor air over an eight-hour period, or in some cases, at a single point in time. The canisters were then sent to a laboratory for analysis. A portable gas chromatograph/mass spectrometer (GC/MS) was also used to analyze air samples on one occasion. The portable GC/MS was used to determine VOC levels at a single point in time rather than over an eight-hour period.

What Criteria did the U.S. EPA use to Evaluate Indoor Air Results?

The EPA compared indoor air results to outdoor air results, short-term health-protective screening levels, and long-term health-protective screening levels. Short-term criteria are used to evaluate continuous exposure to chemicals over hours, days, and months. The EPA used Minimal Risk Levels (MRLs) published by the Agency for Toxic Substances and Disease Registry (ATSDR) as the primary short-term criteria for PCE and TCE.

The long-term criteria EPA used are known as Preliminary Remediation Goals (PRGs). PRGs are general guidelines for evaluating exposures to hazardous air pollutants that occur over many years. In the Superfund program, the EPA generally uses PRGs as a screening tool to determine whether contaminant levels may pose a potential health risk. PRGs incorporate standard EPA exposure assumptions for residential land use that include special consideration of sensitive members of the population, including children.

When indoor air results are higher than the long-term health-based screening levels, further evaluation is warranted to determine if exposures could pose a health concern. When indoor air results are higher than outdoor

air results, it indicates that there is either a source of the chemical inside the building, or that vapors may be seeping into the building as a result of the vapor intrusion pathway.

What did the Indoor Air Results Indicate?

The results of the Omega indoor air sampling showed evidence of vapor intrusion into the former Omega facility and some nearby buildings (see Table 1 for a summary of indoor air results and Figure 2 for sampling areas). In each building, PCE levels were the highest of all

chemicals measured. The PCE levels in two buildings were above the U.S. EPA's screening criteria for long-term exposure. In addition, the highest measured concentrations of TCE and 1,1-DCE were above long-term health-protective screening levels. These screening criteria are developed assuming exposure for 24 hours per day, 350 days per year for 30 years.

For contaminants that have short-term screening levels, indoor air concentrations were below those levels in all buildings sampled, which means that there is not an immediate health risk.

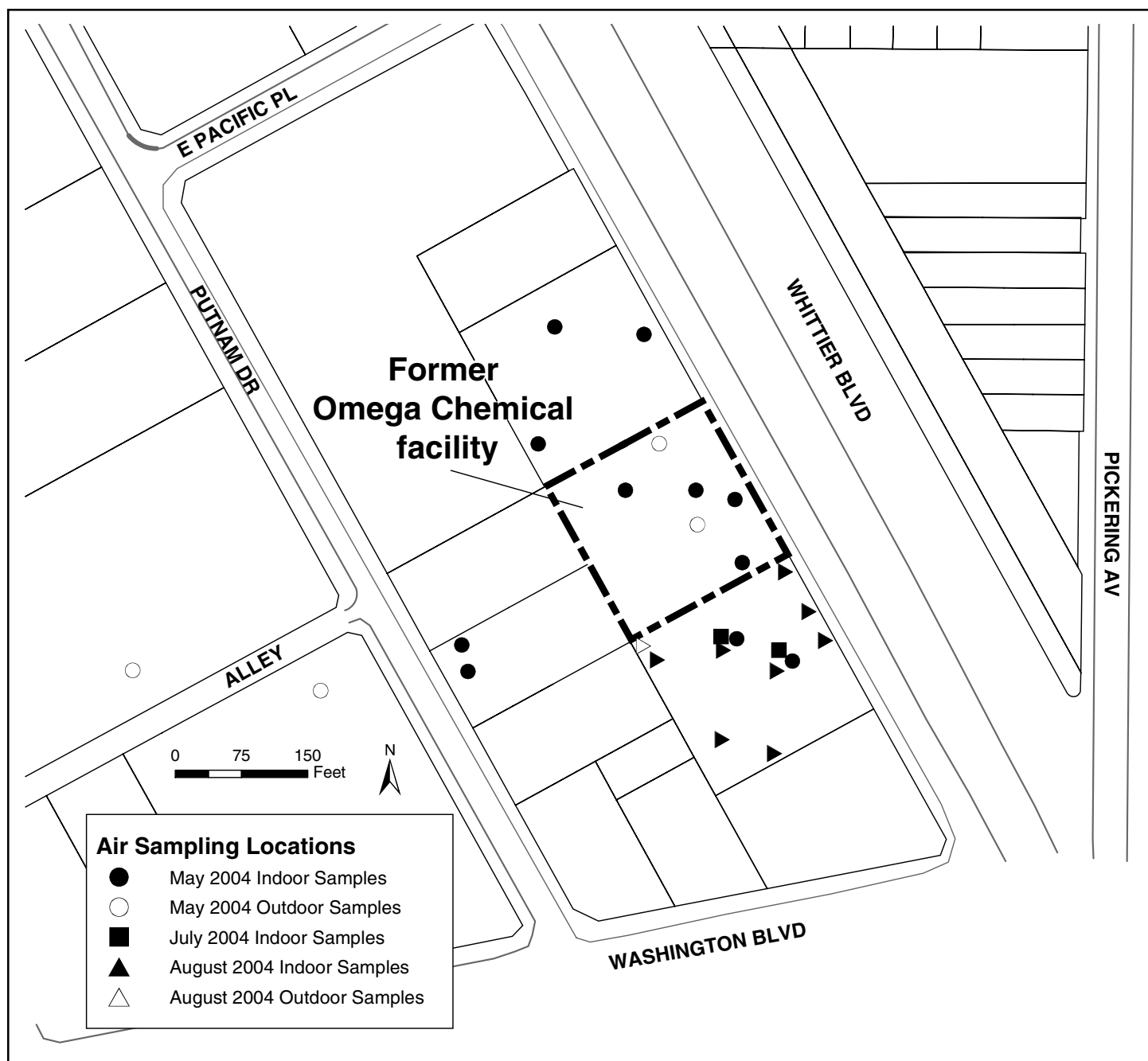


Figure 2: Air sampling locations

Skateland Indoor Air Results

The EPA received the initial sampling data in late July 2004, which showed a maximum PCE level of 1100 micrograms per cubic meter (ug/m³) in Skateland. This level is below the short-term criterion of 1400 ug/m³, but higher than the EPA's long-term screening range of 0.32-32 ug/m³. The EPA has focused its initial attention on reducing the contaminant levels in Skateland because the levels were higher than in other buildings and because of the public use of that building, including children.

Subsequent samples collected from Skateland contained lower PCE levels, possibly due to increased air flow through the building and/or chemical products being removed from inside the building. The EPA received the subsequent sample data in early September. The maximum PCE level in these later samples was 770 ug/m³ and eight-hour samples collected from the center of the skating rink had PCE levels ranging from 66 to 320 ug/

m³. These levels are below the short-term criteria, meaning that there is not an immediate health threat, but still above the accepted levels for continuous exposure over 30 years.

Other contaminants were generally present at lower levels than PCE (see Table 1). Additional data will be collected to confirm contaminant levels throughout the building, and to identify specific pathways of contaminant migration.

What is EPA Doing Now?

EPA is working with the PRPs to implement short-term (interim) and long-term mitigation measures. The best way to reduce indoor air contaminant levels in the short-term is to increase ventilation. EPA staff have talked to both the owner and operator at Skateland and requested that they ventilate the building and increase indoor air exchange with outside air. The PRPs are also working with Skateland to install air purifiers that will further

Table 1: Air Contaminant Levels (All Buildings)

Chemical	Indoor Air Levels (ug/m ³)	Upwind Outdoor Air Levels (ug/m ³)	Short-term Screening Levels (ug/m ³) ¹	Long-term Screening Levels (ug/m ³) ²
PCE	0.14-1100	0.56-0.86	1400	0.32-32
TCE	0.11-270	0.41-0.48	540	0.96-1.7
1,1-DCE	0.04-550	0.071-0.16	Not available	210
Freon 11	0.11-350	1.57-1.80	Not available	730
Freon 113	0.15-1300	0.71-1.10	Not available	31,000

¹ Agency for Toxic Substance and Disease Registry, Minimal Risk Levels, August 2004.

² US EPA Region 9, Ambient Air, Preliminary Remediation Goals, October 2004. For carcinogens, these numbers represent a one-in-one million to one-in-ten thousand excess cancer risk. The TCE numbers reflect both the U.S. EPA provisional and California EPA criteria.

reduce contaminant levels, and to seal cracks in the floor that may be acting as points of entry for vapors to get into the building. Additional indoor air samples will be collected to verify the effectiveness of these measures.

Is my Drinking Water Affected by VOCs in Groundwater?

Contaminant levels in municipal drinking water wells downgradient of the former Omega facility meet drinking water standards. Routine monitoring is conducted by municipal water purveyors to ensure that drinking water standards are not exceeded.

TECHNICAL ASSISTANCE PROGRAM

A Technical Assistance Grant (TAG) is available for citizens who live near a Superfund site. The grant helps qualified citizen groups affected by a Superfund site to hire an independent technical advisor to help interpret and comment on site-related information. An initial grant of up to \$50,000 is available. For further information about the grant, please call us and request an application (toll-free 800-231-3075) or get it from the TAG web page at: www.epa.gov -- Type TAG in the search box and press GO.

FOR ADDITIONAL INFORMATION

Please contact:

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U.S. EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

or call the toll-free message line:
800-231-3075

Site Information Repositories

The U.S. EPA maintains site information repositories at the Whittier Public Library and at the U.S. EPA Superfund Records Center. These repositories contain project documents, fact sheets, and reference materials. The U.S. EPA encourages you to review these documents to gain a more complete understanding of the site. The information repositories' locations are listed below.

U.S. EPA Superfund Records Center
95 Hawthorne Street
San Francisco, CA 94105
(415) 536-2000

Whittier Public Library
7344 S. Washington Avenue
Whittier, CA 90602
(562) 464-3450



The U.S. EPA also has a site information web page at: <http://yosemite.epa.gov/r9/sfund/overview.nsf> Scroll to the Omega Chemical site.



EPA Evaluates Indoor Air at Omega Chemical Site


EPA evalúa el aire adentro en el sitio Omega Chemical

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